现货库存、技术资料、百科信息、热点资讯，精彩尽在鼎好！

TENTATIVE TOSHIBA CMOS Digital Integrated Circuit Silicon Monolithic

TC7WBL125FK

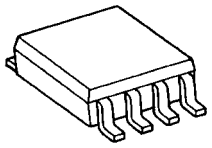
Dual Low-Voltage Bus Switch

The TC7WBL125FK is a low on-resistance, high-speed CMOS 2-bit bus switch with low voltage operation. This bus switch allows the connections or disconnections to be made with minimal propagation delay while maintaining Low power dissipation which is the feature of CMOS.

When output enable ($\overline{OE}$) is at low level, the switch is on; when at high level, the switch is off.

P-MOS and N-MOS channel block also allows that the device is suitable for analog signal transmission.

All inputs are equipped with protection circuits to protect the device from static discharge.



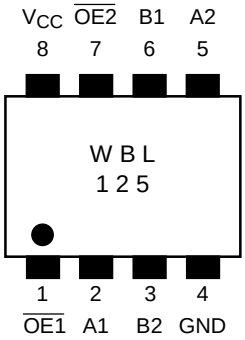
SSOP8-P-0.50A

Weight: 0.01 g (typ.)

Features

- Operating voltage: V_{CC} = 2~3.6 V
- High speed operation: t_{pd} = 0.25 ns (max) @3 V
- Ultra-low on resistance: R_{ON} = 5 Ω (typ.) @3 V
- Electro-static discharge (ESD) performance: ±200 V or more (JEITA)
  ±2000 V or more (MIL)
- High noise immunity: $V_{NIH} = V_{NIL}$ = 28% V_{CC} (min)
- Power-down protection for inputs and I/O terminal.
- Package: US8

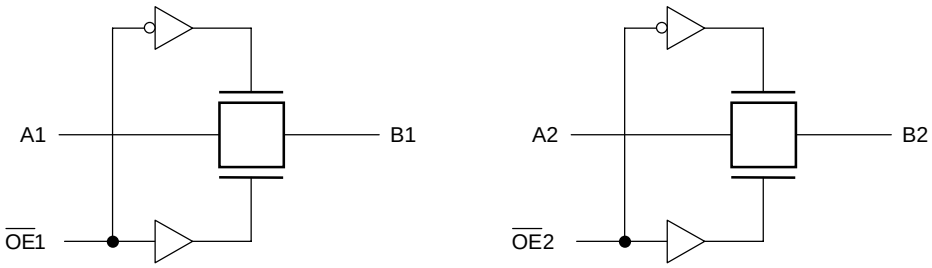
Pin Assignment (top view)



Truth Table

Inputs $\overline{OE}$	Function
L	A port = B port
H	Disconnect

System Diagram



Maximum Ratings

Characteristics	Symbol	Rating	Unit
Power supply voltage	V_{CC}	−0.5~7.0	V
Control pin input voltage	V_{IN}	−0.5~7.0	V
Switch terminal I/O voltage	V_S	−0.5~7.0	V
Clump diode current	I_{IK}	−50	mA
Switch I/O current	I_S	128	mA
Power dissipation	P_D	200	mW
DC V_{CC}/GND current	I_{CC}/I_{GND}	±100	mA
Storage temperature	T_{stg}	−65~150	°C

Recommended Operating Conditions

Characteristics	Symbol	Rating	Unit
Power supply voltage	V_{CC}	2.0~3.6	V
Control pin input voltage	V_{IN}	0~5.5	V
Switch I/O voltage	V_S	0~5.5	V
Operating temperature	T_{opr}	−40~85	°C
Control pin input rise/fall time	dt/dv	0~10	ns/V

Electrical Characteristics

DC Characteristics (Ta = –40~85°C)

Characteristics		Symbol	Test Condition	V_{CC} (V)	Min	Typ.	Max	Unit
Control pin input voltage	"H" level	V_{IH}	—	2.0~3.6	0.7 × V_{CC}	—	—	V
	"L" level	V_{IL}	—	2.0~3.6	—	—	0.3 × V_{CC}	
Input leakage current		I_{IN}	V_{IN} = 0~5.5 V	2.0~3.6	—	—	±1.0	μA
Power off leakage current		I_{OFF}	A, B, $\overline{OE}$ = 0~5.5 V	0	—	—	±1.0	μA
Off-state leakage current (switch off)		I_{SZ}	A, B = 0~5.5 V, $\overline{OE}$ = V_{CC}	2.0~3.6	—	—	±1.0	μA
ON resistance (Note 3)		R_{ON}	V_{IS} = 0 V, I_{IS} = 30 mA (Note 1)	3.0	—	2	7	Ω
			V_{IS} = 3.0 V, I_{IS} = 30 mA (Note 1)	3.0	—	3	7	
			V_{IS} = 2.4 V, I_{IS} = 15 mA (Note 1)	3.0	—	5	15	
			V_{IS} = 0 V, I_{IS} = 24 mA (Note 2)	2.3	—	3	10	
			V_{IS} = 2.3 V, I_{IS} = 24 mA (Note 2)	2.3	—	4	15	
			V_{IS} = 1.7 V, I_{IS} = 15 mA (Note 2)	2.3	—	9	25	
Quiescent supply current		I_{CC}	V_{IN} = V_{CC} or GND, I_{OUT} = 0	3.6	—	—	10	μA

Note 1: The typical values are at V_{CC} = 3.3 V, Ta = 25°C.

Note 2: The typical values are at V_{CC} = 2.5 V, Ta = 25°C.

Note 3: Measured by the voltage drop between A and B pins at the indicated current through the switch. On resistance is determined by the lower of the voltages on two (A or B) pins.

AC Characteristics (Ta = –40~85°C)

Characteristics	Symbol	Test Condition	V_{CC} (V)	Min	Max	Unit
Propagation delay time (bus to bus)	t_{pLH} t_{pHL}	Figure 1, Figure 2 (Note 4)	3.0	—	0.25	ns
Output enable time	t_{pZL} t_{pZH}	Figure 1, Figure 3	3.0	—	TBD	ns
			2.3	—	TBD	
Output disable time	t_{pLZ} t_{pHZ}	Figure 1, Figure 3	3.0	—	TBD	ns
			2.3	—	TBD	

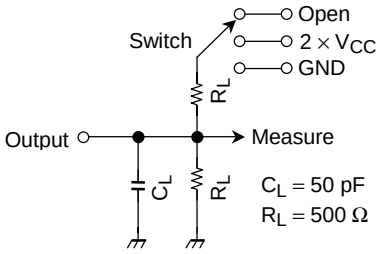
Note 4: This parameter is guaranteed by design but is not tested. The bus switch contributes no propagation delay other than the RC delay of the typical on resistance of the switch and the 50 pF load capacitance, when driven by an ideal voltage the source (zero output impedance).

Capacitive Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	V_{CC} (V)	Typ.	Unit
Control pin input capacitance	C_{IN}	(Note 5)	3.0	3	pF
Switch terminal capacitance	$C_{I/O}$	$\overline{OE}$ = V_{CC} (Note 5)	3.0	10	pF

Note 5: This item is guaranteed by design.

AC Test Circuit



Parameter	Switch
t_{pLH}, t_{pHL}	Open
t_{pLZ}, t_{pZL}	2 × V_{CC}
t_{pHZ}, t_{pZH}	GND

Figure 1

AC Waveform

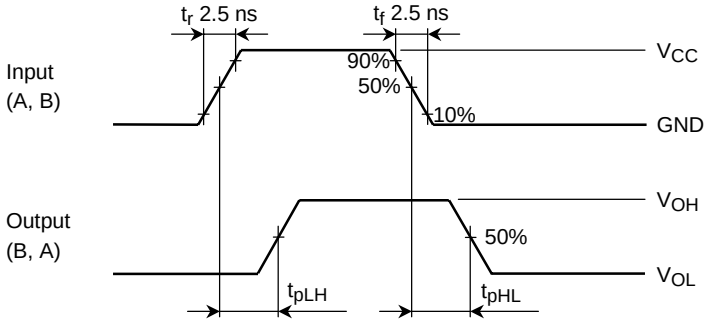


Figure 2 t_{pLH}, t_{pHL}

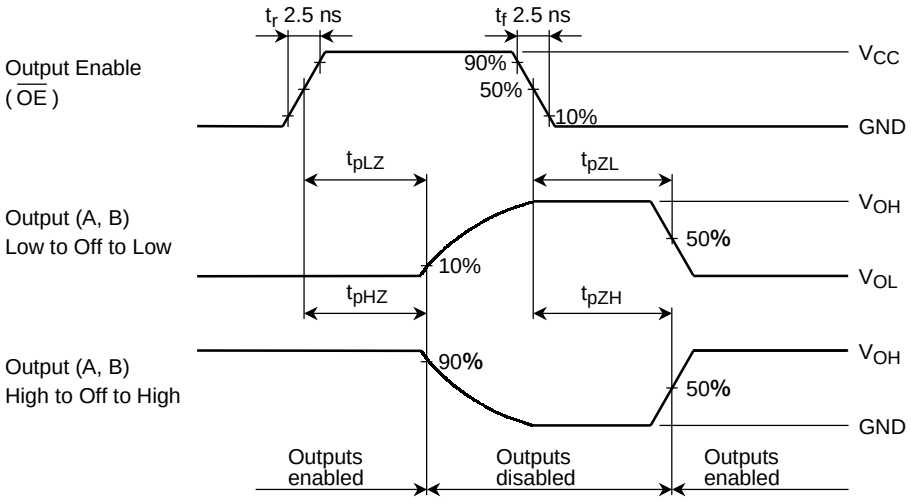
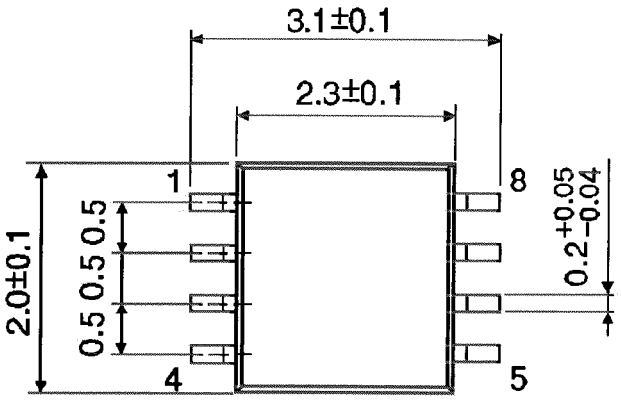
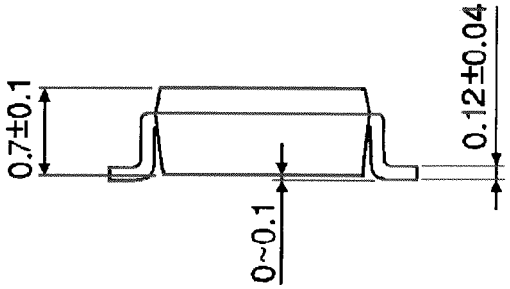


Figure 3 t_{pLZ}, t_{pHZ}, t_{pZL}, t_{pZH}

Package Dimensions

SSOP8-P-0.50A Unit : mm





Weight: 0.01 g (typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer’s own risk.
- The products described in this document are subject to the foreign exchange and foreign trade laws.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.